



1

SEQUENCE LISTING

- <110> PARDO-FERNANDEZ, LUIS ANGEL
STUHMER, WALTER
BECKH, SYNNOVE
BRUGGEMANN, ANDREA
FERNANDEZ-MIRANDA, DONATO DEL CAMINO
PEREZ, ARACELI SANCHEZ
WESELOH, RUDIGER
- <120> NOVEL HUMAN K⁺ ION CHANNEL AND THERAPEUTIC APPLICATIONS
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- <140> 09/694,777
<141> 2000-10-23
- <150> PCT/EP99/02695
<151> 1999-04-21
- <150> EP 98 10 7268.9
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic DNA

 <400> 10
 cgcataact acctgaagac g . 21

 <210> 11
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic DNA

 <400> 11
 tctgtggatg gggcgatgtt c 21

 <210> 12
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic DNA

 <400> 12
 gggaggatga ccattggct 18

<210> 13
 <211> 2886
 <212> DNA
 <213> Homo sapiens

<400> 13
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 cctatttgtgt acagcaatga tggattttgc aagctgtctgt gctatcacag gccagaaagt 180
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 aaaaaaagtgc ggcaaacatt tgagaactat gagatgaatt cctttgaaat tctgatgtac 300
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 gaggatgatt catgtaaaag ctgggggaag tttgctcggc tgacaagagc actgacaagc 480
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<210> 14
 <211> 2967
 <212> DNA
 <213> Homo sapiens

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<210> 15
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Antisense
 phosphorothioate ODN

<400> 15
 cagccatggt catcctccc 19

<210> 16
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 scrambled sequence

<400> 16
 gtcggtacca gtaggagg 19

<210> 17
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 17
 tcagcccagc agaagcatta t 21

<210> 18
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 18
 ctggcagcgt gtgagagc 18

<210> 19
 <211> 3041
 <212> DNA
 <213> Bovine sp.

<400> 19
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 agggactggt ggccccgcaa aacacgtttc tggagaatat tgtccggcgg tccaatgata 120

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<210> 20
 <211> 3041
 <212> DNA
 <213> Rattus sp.

<400> 20
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<210> 21
 <211> 960
 <212> PRT
 <213> Bovine sp.

<400> 21

Met Thr Met Ala Gly Gly Arg Lys Gly Leu Val Ala Pro Gln Asn Thr
 1 5 10 15

Phe Leu Glu Asn Ile Val Arg Arg Ser Asn Asp Thr Asn Phe Val Leu
 20 25 30

Gly Asn Ala Gln Ile Val Asp Trp Pro Ile Val Tyr Ser Asn Asp Gly
 35 40 45

Phe Cys Lys Leu Ser Gly Tyr His Arg Ala Glu Val Met Gln Lys Ser
 50 55 60

Ser Thr Cys Ser Phe Met Tyr Gly Glu Leu Thr Asp Lys Asp Thr Ile
 65 70 75 80

Glu Lys Val Arg Gln Thr Phe Glu Asn Tyr Glu Met Asn Ser Phe Glu
 85 90 95

Ile Leu Met Tyr Lys Lys Asn Arg Thr Pro Val Trp Phe Phe Val Lys
 100 105 110

Ile Ala Pro Ile Arg Asn Glu Gln Asp Lys Val Val Leu Phe Leu Cys
 115 120 125

Thr Phe Ser Asp Ile Thr Ala Phe Lys Gln Pro Ile Glu Asp Asp Ser
 130 135 140

Cys Lys Gly Trp Gly Lys Phe Ala Arg Leu Thr Arg Ala Leu Thr Ser
 145 150 155 160

Ser Arg Gly Val Leu Gln Gln Leu Ala Pro Ser Val Gln Lys Gly Glu
 165 170 175

Asn Val His Lys His Ser Arg Leu Ala Glu Val Leu Gln Leu Gly Ser
 180 185 190

Asp Ile Leu Pro Gln Tyr Lys Gln Glu Ala Pro Lys Thr Pro Pro His
 195 200 205

Ile Ile Leu His Tyr Cys Val Phe Lys Thr Thr Trp Asp Trp Ile Ile
 210 215 220

Leu Ile Leu Thr Phe Tyr Thr Ala Ile Leu Val Pro Tyr Asn Val Ser
 225 230 235 240

Phe Lys Thr Arg Gln Asn Asn Val Ala Trp Leu Val Val Asp Ser Ile
 245 250 255

Val Asp Val Ile Phe Leu Val Asp Ile Val Leu Asn Phe His Thr Thr
 260 265 270

Phe Val Gly Pro Ala Gly Glu Val Ile Ser Asp Pro Lys Leu Ile Arg
 275 280 285

Met Asn Tyr Leu Lys Thr Trp Phe Val Ile Asp Leu Leu Ser Cys Leu
 290 295 300

Pro Tyr Asp Val Ile Asn Ala Phe Glu Asn Val Asp Glu Gly Ile Ser
 305 310 315 320
 Ser Leu Phe Ser Ser Leu Lys Val Val Arg Leu Leu Arg Leu Gly Arg
 325 330 335
 Val Ala Arg Lys Leu Asp His Tyr Ile Glu Tyr Gly Ala Ala Val Leu
 340 345 350
 Val Leu Leu Val Cys Val Phe Gly Leu Ala Ala His Trp Met Ala Cys
 355 360 365
 Ile Trp Tyr Ser Ile Gly Asp Tyr Glu Ile Phe Asp Glu Asp Thr Lys
 370 375 380
 Thr Ile Arg Asn Asn Ser Trp Leu Tyr Gln Leu Ala Met Asp Ile Gly
 385 390 395 400
 Thr Pro Tyr Gln Phe Asn Gly Ser Gly Ser Gly Lys Trp Glu Gly Gly
 405 410 415
 Pro Ser Lys Asn Ser Val Tyr Ile Ser Ser Leu Tyr Phe Thr Met Thr
 420 425 430
 Ser Leu Thr Ser Val Gly Phe Gly Asn Ile Ala Pro Ser Thr Asp Ile
 435 440 445
 Glu Lys Ile Phe Ala Val Ala Ile Met Met Ile Gly Ser Leu Leu Tyr
 450 455 460
 Ala Thr Ile Phe Gly Asn Val Thr Thr Ile Phe Gln Gln Met Tyr Ala
 465 470 475 480
 Asn Thr Asn Arg Tyr His Glu Met Leu Asn Ser Val Arg Asp Phe Leu
 485 490 495
 Lys Leu Tyr Gln Val Pro Lys Gly Leu Ser Glu Arg Val Met Asp Tyr
 500 505 510
 Ile Val Ser Thr Trp Ser Met Ser Arg Gly Ile Asp Thr Glu Lys Val
 515 520 525
 Leu Gln Ile Cys Pro Lys Asp Met Arg Ala Asp Ile Cys Val His Leu
 530 535 540
 Asn Arg Lys Val Phe Lys Glu His Pro Ala Phe Arg Leu Ala Ser Asp
 545 550 555 560
 Gly Cys Leu Arg Ala Leu Ala Met Glu Phe Gln Thr Val His Cys Ala
 565 570 575
 Pro Gly Asp Leu Ile Tyr His Ala Gly Glu Ser Val Asp Ser Leu Cys
 580 585 590
 Phe Val Val Ser Gly Ser Leu Glu Val Ile Gln Asp Asp Glu Val Val
 595 600 605

Ala Ile Leu Gly Lys Gly Asp Val Phe Gly Asp Val Phe Trp Lys Glu
 610 615 620
 Ala Thr Leu Ala Gln Ser Cys Ala Asn Val Arg Ala Leu Thr Tyr Cys
 625 630 635 640
 Asp Leu His Val Ile Lys Arg Asp Ala Leu Gln Lys Val Leu Glu Phe
 645 650 655
 Tyr Thr Ala Phe Ser His Ser Phe Ser Arg Asn Leu Ile Leu Thr Tyr
 660 665 670
 Asn Leu Arg Lys Arg Ile Val Phe Arg Lys Ile Ser Asp Val Lys Arg
 675 680 685
 Glu Glu Glu Glu Arg Met Lys Arg Lys Asn Glu Ala Pro Leu Ile Leu
 690 695 700
 Pro Pro Asp His Pro Val Arg Arg Leu Phe Gln Arg Phe Arg Gln Gln
 705 710 715 720
 Lys Glu Ala Arg Leu Ala Ala Glu Arg Gly Gly Arg Asp Leu Asp Asp
 725 730 735
 Leu Asp Val Glu Lys Gly Ser Val Leu Thr Glu His Ser His His Gly
 740 745 750
 Leu Ala Lys Ala Ser Val Val Thr Val Arg Glu Ser Pro Ala Thr Pro
 755 760 765
 Val Ala Phe Pro Ala Ala Ala Ala Pro Ala Gly Leu Asp His Ala Arg
 770 775 780
 Leu Gln Ala Pro Gly Ala Glu Gly Leu Gly Pro Lys Ala Gly Gly Ala
 785 790 795 800
 Asp Cys Ala Lys Arg Lys Gly Trp Ala Arg Phe Lys Asp Ala Cys Gly
 805 810 815
 Gln Ala Glu Asp Trp Ser Lys Val Ser Lys Ala Glu Ser Met Glu Thr
 820 825 830
 Leu Pro Glu Arg Thr Lys Ala Ala Gly Glu Ala Thr Leu Lys Lys Thr
 835 840 845
 Asp Ser Cys Asp Ser Gly Ile Thr Lys Ser Asp Leu Arg Leu Asp Asn
 850 855 860
 Val Gly Glu Ala Arg Ser Pro Gln Asp Arg Ser Pro Ile Leu Ala Glu
 865 870 875 880
 Val Lys His Ser Phe Tyr Pro Ile Pro Glu Gln Thr Leu Gln Ala Ala
 885 890 895
 Val Leu Glu Val Lys His Glu Leu Lys Glu Asp Ile Lys Ala Leu Ser
 900 905 910

Thr Lys Met Thr Ser Ile Glu Lys Gln Leu Ser Glu Ile Leu Arg Ile
 915 920 925
 Leu Thr Ser Arg Arg Ser Ser Gln Ser Pro Gln Glu Leu Phe Glu Ile
 930 935 940
 Ser Arg Pro Gln Ser Pro Glu Ser Glu Arg Asp Ile Phe Gly Ala Ser
 945 950 955 960

<210> 22
 <211> 987
 <212> PRT
 <213> Bovine sp.

<400> 22
 Met Thr Met Ala Gly Gly Arg Lys Gly Leu Val Ala Pro Gln Asn Thr
 1 5 10 15
 Phe Leu Glu Asn Ile Val Arg Arg Ser Asn Asp Thr Asn Phe Val Leu
 20 25 30
 Gly Asn Ala Gln Ile Val Asp Trp Pro Ile Val Tyr Ser Asn Asp Gly
 35 40 45
 Phe Cys Lys Leu Ser Gly Tyr His Arg Ala Glu Val Met Gln Lys Ser
 50 55 60
 Ser Thr Cys Ser Phe Met Tyr Gly Glu Leu Thr Asp Lys Asp Thr Ile
 65 70 75 80
 Glu Lys Val Arg Gln Thr Phe Glu Asn Tyr Glu Met Asn Ser Phe Glu
 85 90 95
 Ile Leu Met Tyr Lys Lys Asn Arg Thr Pro Val Trp Phe Phe Val Lys
 100 105 110
 Ile Ala Pro Ile Arg Asn Glu Gln Asp Lys Val Val Leu Phe Leu Cys
 115 120 125
 Thr Phe Ser Asp Ile Thr Ala Phe Lys Gln Pro Ile Glu Asp Asp Ser
 130 135 140
 Cys Lys Gly Trp Gly Lys Phe Ala Arg Leu Thr Arg Ala Leu Thr Ser
 145 150 155 160
 Ser Arg Gly Val Leu Gln Gln Leu Ala Pro Ser Val Gln Lys Gly Glu
 165 170 175
 Asn Val His Lys His Ser Arg Leu Ala Glu Val Leu Gln Leu Gly Ser
 180 185 190
 Asp Ile Leu Pro Gln Tyr Lys Gln Glu Ala Pro Lys Thr Pro Pro His
 195 200 205
 Ile Ile Leu His Tyr Cys Val Phe Lys Thr Thr Trp Asp Trp Ile Ile
 210 215 220

Leu Ile Leu Thr Phe Tyr Thr Ala Ile Leu Val Pro Tyr Asn Val Ser
 225 230 235 240
 Phe Lys Thr Arg Gln Asn Asn Val Ala Trp Leu Val Val Asp Ser Ile
 245 250 255
 Val Asp Val Ile Phe Leu Val Asp Ile Val Leu Asn Phe His Thr Thr
 260 265 270
 Phe Val Gly Pro Ala Gly Glu Val Ile Ser Asp Pro Lys Leu Ile Arg
 275 280 285
 Met Asn Tyr Leu Lys Thr Trp Phe Val Ile Asp Leu Leu Ser Cys Leu
 290 295 300
 Pro Tyr Asp Val Ile Asn Ala Phe Glu Asn Val Asp Glu Val Ser Ala
 305 310 315 320
 Phe Met Gly Asp Pro Gly Lys Ile Gly Phe Ala Asp Gln Ile Pro Pro
 325 330 335
 Pro Leu Glu Gly Arg Glu Ser Gln Gly Ile Ser Ser Leu Phe Ser Ser
 340 345 350
 Leu Lys Val Val Arg Leu Leu Arg Leu Gly Arg Val Ala Arg Lys Leu
 355 360 365
 Asp His Tyr Ile Glu Tyr Gly Ala Ala Val Leu Val Leu Val Cys
 370 375 380
 Val Phe Gly Leu Ala Ala His Trp Met Ala Cys Ile Trp Tyr Ser Ile
 385 390 395 400
 Gly Asp Tyr Glu Ile Phe Asp Glu Asp Thr Lys Thr Ile Arg Asn Asn
 405 410 415
 Ser Trp Leu Tyr Gln Leu Ala Met Asp Ile Gly Thr Pro Tyr Gln Phe
 420 425 430
 Asn Gly Ser Gly Ser Gly Lys Trp Glu Gly Gly Pro Ser Lys Asn Ser
 435 440 445
 Val Tyr Ile Ser Ser Leu Tyr Phe Thr Met Thr Ser Leu Thr Ser Val
 450 455 460
 Gly Phe Gly Asn Ile Ala Pro Ser Thr Asp Ile Glu Lys Ile Phe Ala
 465 470 475 480
 Val Ala Ile Met Met Ile Gly Ser Leu Leu Tyr Ala Thr Ile Phe Gly
 485 490 495
 Asn Val Thr Thr Ile Phe Gln Gln Met Tyr Ala Asn Thr Asn Arg Tyr
 500 505 510
 His Glu Met Leu Asn Ser Val Arg Asp Phe Leu Lys Leu Tyr Gln Val
 515 520 525

Pro Lys Gly Leu Ser Glu Arg Val Met Asp Tyr Ile Val Ser Thr Trp
 530 535 540
 Ser Met Ser Arg Gly Ile Asp Thr Glu Lys Val Leu Gln Ile Cys Pro
 545 550 555 560
 Lys Asp Met Arg Ala Asp Ile Cys Val His Leu Asn Arg Lys Val Phe
 565 570 575
 Lys Glu His Pro Ala Phe Arg Leu Ala Ser Asp Gly Cys Leu Arg Ala
 580 585 590
 Leu Ala Met Glu Phe Gln Thr Val His Cys Ala Pro Gly Asp Leu Ile
 595 600 605
 Tyr His Ala Gly Glu Ser Val Asp Ser Leu Cys Phe Val Val Ser Gly
 610 615 620
 Ser Leu Glu Val Ile Gln Asp Asp Glu Val Val Ala Ile Leu Gly Lys
 625 630 635 640
 Gly Asp Val Phe Gly Asp Val Phe Trp Lys Glu Ala Thr Leu Ala Gln
 645 650 655
 Ser Cys Ala Asn Val Arg Ala Leu Thr Tyr Cys Asp Leu His Val Ile
 660 665 670
 Lys Arg Asp Ala Leu Gln Lys Val Leu Glu Phe Tyr Thr Ala Phe Ser
 675 680 685
 His Ser Phe Ser Arg Asn Leu Ile Leu Thr Tyr Asn Leu Arg Lys Arg
 690 695 700
 Ile Val Phe Arg Lys Ile Ser Asp Val Lys Arg Glu Glu Glu Glu Arg
 705 710 715 720
 Met Lys Arg Lys Asn Glu Ala Pro Leu Ile Leu Pro Pro Asp His Pro
 725 730 735
 Val Arg Arg Leu Phe Gln Arg Phe Arg Gln Gln Lys Glu Ala Arg Leu
 740 745 750
 Ala Ala Glu Arg Gly Gly Arg Asp Leu Asp Asp Leu Asp Val Glu Lys
 755 760 765
 Gly Ser Val Leu Thr Glu His Ser His His Gly Leu Ala Lys Ala Ser
 770 775 780
 Val Val Thr Val Arg Glu Ser Pro Ala Thr Pro Val Ala Phe Pro Ala
 785 790 795 800
 Ala Ala Ala Pro Ala Gly Leu Asp His Ala Arg Leu Gln Ala Pro Gly
 805 810 815
 Ala Glu Gly Leu Gly Pro Lys Ala Gly Gly Ala Asp Cys Ala Lys Arg
 820 825 830

Lys Gly Trp Ala Arg Phe Lys Asp Ala Cys Gly Gln Ala Glu Asp Trp
 835 840 845
 Ser Lys Val Ser Lys Ala Glu Ser Met Glu Thr Leu Pro Glu Arg Thr
 850 855 860
 Lys Ala Ala Gly Glu Ala Thr Leu Lys Lys Thr Asp Ser Cys Asp Ser
 865 870 875 880
 Gly Ile Thr Lys Ser Asp Leu Arg Leu Asp Asn Val Gly Glu Ala Arg
 885 890 895
 Ser Pro Gln Asp Arg Ser Pro Ile Leu Ala Glu Val Lys His Ser Phe
 900 905 910
 Tyr Pro Ile Pro Glu Gln Thr Leu Gln Ala Ala Val Leu Glu Val Lys
 915 920 925
 His Glu Leu Lys Glu Asp Ile Lys Ala Leu Ser Thr Lys Met Thr Ser
 930 935 940
 Ile Glu Lys Gln Leu Ser Glu Ile Leu Arg Ile Leu Thr Ser Arg Arg
 945 950 955 960
 Ser Ser Gln Ser Pro Gln Glu Leu Phe Glu Ile Ser Arg Pro Gln Ser
 965 970 975
 Pro Glu Ser Glu Arg Asp Ile Phe Gly Ala Ser
 980 985

<210> 23
 <211> 989
 <212> PRT
 <213> Mus sp.

<400> 23
 Met Thr Met Ala Gly Gly Arg Lys Gly Leu Val Ala Pro Gln Asn Thr
 1 5 10 15
 Phe Leu Glu Asn Ile Val Arg Arg Ser Asn Asp Thr Asn Phe Val Leu
 20 25 30
 Gly Asn Ala Gln Ile Val Asp Trp Pro Ile Val Tyr Ser Asn Asp Gly
 35 40 45
 Phe Cys Lys Leu Ser Gly Tyr His Arg Ala Glu Val Met Gln Lys Ser
 50 55 60
 Ser Ala Cys Ser Phe Met Tyr Gly Glu Leu Thr Asp Lys Asp Thr Val
 65 70 75 80
 Glu Lys Val Arg Gln Thr Phe Glu Asn Tyr Glu Met Asn Ser Phe Glu
 85 90 95
 Ile Leu Met Tyr Lys Lys Asn Arg Thr Pro Val Trp Phe Phe Val Lys
 100 105 110

Ile Ala Pro Ile Arg Asn Glu Gln Asp Lys Val Val Leu Phe Leu Cys
 115 120 125
 Thr Phe Ser Asp Ile Thr Ala Phe Lys Gln Pro Ile Glu Asp Asp Ser
 130 135 140
 Cys Lys Gly Trp Gly Lys Phe Ala Arg Leu Thr Arg Ala Leu Thr Ser
 145 150 155 160
 Ser Arg Gly Val Leu Gln Gln Leu Ala Pro Ser Val Gln Lys Gly Glu
 165 170 175
 Asn Val His Lys His Ser Arg Leu Ala Glu Val Leu Gln Leu Gly Ser
 180 185 190
 Asp Ile Leu Pro Gln Tyr Lys Gln Glu Ala Pro Lys Thr Pro Pro His
 195 200 205
 Ile Ile Leu His Tyr Cys Val Phe Lys Thr Thr Trp Asp Trp Ile Ile
 210 215 220
 Leu Ile Leu Thr Phe Tyr Thr Ala Ile Leu Val Pro Tyr Asn Val Ser
 225 230 235 240
 Phe Lys Thr Arg Gln Asn Asn Val Ala Trp Leu Val Val Asp Ser Ile
 245 250 255
 Val Asp Val Ile Phe Leu Val Asp Ile Val Leu Asn Phe His Thr Thr
 260 265 270
 Phe Val Gly Pro Ala Gly Glu Val Ile Ser Asp Pro Lys Leu Ile Arg
 275 280 285
 Met Asn Tyr Leu Lys Thr Trp Phe Val Ile Asp Leu Leu Ser Cys Leu
 290 295 300
 Pro Tyr Asp Val Ile Asn Ala Phe Glu Asn Val Asp Glu Val Ser Ala
 305 310 315 320
 Phe Met Gly Asp Pro Gly Lys Ile Gly Phe Ala Asp Gln Ile Pro Pro
 325 330 335
 Pro Leu Glu Gly Arg Glu Ser Gln Gly Ile Ser Ser Leu Phe Ser Ser
 340 345 350
 Leu Lys Val Val Arg Leu Leu Arg Leu Gly Arg Val Ala Arg Lys Leu
 355 360 365
 Asp His Tyr Ile Glu Tyr Gly Ala Ala Val Leu Val Leu Leu Val Cys
 370 375 380
 Val Phe Gly Leu Ala Ala His Trp Met Ala Cys Ile Trp Tyr Ser Ile
 385 390 395 400
 Gly Asp Tyr Glu Ile Phe Asp Glu Asp Thr Lys Thr Ile Arg Asn Asn
 405 410 415

Ser Trp Leu Tyr Gln Leu Ala Leu Asp Ile Gly Thr Pro Tyr Gln Phe
 420 425 430
 Asn Gly Ser Gly Ser Gly Lys Trp Glu Gly Gly Pro Ser Lys Asn Ser
 435 440 445
 Val Tyr Ile Ser Ser Leu Tyr Phe Thr Met Thr Ser Leu Thr Ser Val
 450 455 460
 Gly Phe Gly Asn Ile Ala Pro Ser Thr Asp Ile Glu Lys Ile Phe Ala
 465 470 475 480
 Val Ala Ile Met Met Ile Gly Ser Leu Leu Tyr Ala Thr Ile Phe Gly
 485 490 495
 Asn Val Thr Thr Ile Phe Gln Gln Met Tyr Ala Asn Thr Asn Arg Tyr
 500 505 510
 His Glu Met Leu Asn Ser Val Arg Asp Phe Leu Lys Leu Tyr Gln Val
 515 520 525
 Pro Lys Gly Leu Ser Glu Arg Val Met Asp Tyr Ile Val Ser Thr Trp
 530 535 540
 Ser Met Ser Arg Gly Ile Asp Thr Glu Lys Val Leu Gln Ile Cys Pro
 545 550 555 560
 Lys Asp Met Arg Ala Asp Ile Cys Val His Leu Asn Arg Lys Val Phe
 565 570 575
 Lys Glu His Pro Ala Phe Arg Leu Ala Ser Asp Gly Cys Leu Arg Ala
 580 585 590
 Leu Ala Met Glu Phe Gln Thr Val His Cys Ala Pro Gly Asp Leu Ile
 595 600 605
 Tyr His Ala Gly Glu Ser Val Asp Ser Leu Cys Phe Val Val Ser Gly
 610 615 620
 Ser Leu Glu Val Ile Gln Asp Asp Glu Val Val Ala Ile Leu Gly Lys
 625 630 635 640
 Gly Asp Val Phe Gly Asp Val Phe Trp Lys Glu Ala Thr Leu Ala Gln
 645 650 655
 Ser Cys Ala Asn Val Arg Ala Leu Thr Tyr Cys Asp Leu His Val Ile
 660 665 670
 Lys Arg Asp Ala Leu Gln Lys Val Leu Glu Phe Tyr Thr Ala Phe Ser
 675 680 685
 His Ser Phe Ser Arg Asn Leu Ile Leu Thr Tyr Asn Leu Arg Lys Arg
 690 695 700
 Ile Val Phe Arg Lys Ile Ser Asp Val Lys Arg Glu Glu Glu Glu Arg
 705 710 715 720

Met Lys Arg Lys Asn Glu Ala Pro Leu Ile Leu Pro Pro Asp His Pro
725 730 735

Val Arg Arg Leu Phe Gln Arg Phe Arg Gln Gln Lys Glu Ala Arg Leu
740 745 750

Ala Ala Glu Arg Gly Gly Arg Asp Leu Asp Asp Leu Asp Val Glu Lys
755 760 765

Gly Asn Ala Leu Thr Asp His Thr Ser Ala Asn His Gly Leu Ala Lys
770 775 780

Ala Ser Val Val Thr Val Arg Glu Ser Pro Ala Thr Pro Val Ala Phe
785 790 795 800

Gln Ala Ala Thr Thr Ser Thr Met Ser Asp His Ala Lys Leu His Ala
805 810 815

Pro Gly Ser Glu Cys Leu Gly Pro Lys Ala Val Ser Cys Asp Pro Ala
820 825 830

Lys Arg Lys Gly Trp Ala Arg Phe Lys Asp Ala Cys Gly Gln Ala Glu
835 840 845

Asp Trp Ser Lys Val Ser Lys Ala Glu Ser Met Glu Thr Leu Pro Glu
850 855 860

Arg Thr Lys Ala Pro Gly Glu Ala Thr Leu Lys Lys Thr Asp Ser Cys
865 870 875 880

Asp Ser Gly Ile Thr Lys Ser Asp Leu Arg Leu Asp Asn Val Gly Glu
885 890 895

Thr Arg Ser Pro Gln Asp Arg Ser Pro Ile Leu Ala Glu Val Lys His
900 905 910

Ser Phe Tyr Pro Ile Pro Glu Gln Thr Leu Gln Ala Ala Val Leu Glu
915 920 925

Val Lys Tyr Glu Leu Lys Glu Asp Ile Lys Ala Leu Asn Ala Lys Met
930 935 940

Thr Ser Ile Glu Lys Gln Leu Ser Glu Ile Leu Arg Ile Leu Met Ser
945 950 955 960

Arg Gly Ser Ala Gln Ser Pro Gln Glu Thr Gly Glu Ile Ser Arg Pro
965 970 975

Gln Ser Pro Glu Ser Asp Arg Asp Ile Phe Gly Ala Ser
980 985

<210> 24
 <211> 962
 <212> PRT
 <213> Rattus sp.

<400> 24

Met	Thr	Met	Ala	Gly	Gly	Arg	Lys	Gly	Leu	Val	Ala	Pro	Gln	Asn	Thr
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Phe	Leu	Glu	Asn	Ile	Val	Arg	Arg	Ser	Asn	Asp	Thr	Asn	Phe	Val	Leu
			20					25					30		
Gly	Asn	Ala	Gln	Ile	Val	Asp	Trp	Pro	Ile	Val	Tyr	Ser	Asn	Asp	Gly
		35					40					45			
Phe	Cys	Lys	Leu	Ser	Gly	Tyr	His	Arg	Ala	Glu	Val	Met	Gln	Lys	Ser
	50					55					60				
Ser	Ala	Cys	Ser	Phe	Met	Tyr	Gly	Glu	Leu	Thr	Asp	Lys	Asp	Thr	Val
	65				70					75					80
Glu	Lys	Val	Arg	Gln	Thr	Phe	Glu	Asn	Tyr	Glu	Met	Asn	Ser	Phe	Glu
				85					90					95	
Ile	Leu	Met	Tyr	Lys	Lys	Asn	Arg	Thr	Pro	Val	Trp	Phe	Phe	Val	Lys
		100						105					110		
Ile	Ala	Pro	Ile	Arg	Asn	Glu	Gln	Asp	Lys	Val	Val	Leu	Phe	Leu	Cys
		115					120					125			
Thr	Phe	Ser	Asp	Ile	Thr	Ala	Phe	Lys	Gln	Pro	Ile	Glu	Asp	Asp	Ser
	130					135					140				
Cys	Lys	Gly	Trp	Gly	Lys	Phe	Ala	Arg	Leu	Thr	Arg	Ala	Leu	Thr	Ser
	145				150					155				160	
Ser	Arg	Gly	Val	Leu	Gln	Gln	Leu	Ala	Pro	Ser	Val	Gln	Lys	Gly	Glu
			165						170					175	
Asn	Val	His	Lys	His	Ser	Arg	Leu	Ala	Glu	Val	Leu	Gln	Leu	Gly	Ser
			180					185					190		
Asp	Ile	Leu	Pro	Gln	Tyr	Lys	Gln	Glu	Ala	Pro	Lys	Thr	Pro	Pro	His
		195					200					205			
Ile	Ile	Leu	His	Tyr	Cys	Val	Phe	Lys	Thr	Thr	Trp	Asp	Trp	Ile	Ile
	210					215					220				
Leu	Ile	Leu	Thr	Phe	Tyr	Thr	Ala	Ile	Leu	Val	Pro	Tyr	Asn	Val	Ser
	225				230					235				240	
Phe	Lys	Thr	Arg	Gln	Asn	Asn	Val	Ala	Trp	Leu	Val	Val	Asp	Ser	Ile
			245						250					255	
Val	Asp	Val	Ile	Phe	Leu	Val	Asp	Ile	Val	Leu	Asn	Phe	His	Thr	Thr
		260						265					270		
Phe	Val	Gly	Pro	Ala	Gly	Glu	Val	Ile	Ser	Asp	Pro	Lys	Leu	Ile	Arg
		275					280					285			
Met	Asn	Tyr	Leu	Lys	Thr	Trp	Phe	Val	Ile	Asp	Leu	Leu	Ser	Cys	Leu
	290					295					300				

Pro Tyr Asp Val Ile Asn Ala Phe Glu Asn Val Asp Glu Gly Ile Ser
 305 310 315 320
 Ser Leu Phe Ser Ser Leu Lys Val Val Arg Leu Leu Arg Leu Gly Arg
 325 330 335
 Val Ala Arg Lys Leu Asp His Tyr Ile Glu Tyr Gly Ala Ala Val Leu
 340 345 350
 Val Leu Leu Val Cys Val Phe Gly Leu Ala Ala His Trp Met Ala Cys
 355 360 365
 Ile Trp Tyr Ser Ile Gly Asp Tyr Glu Ile Phe Asp Glu Asp Thr Lys
 370 375 380
 Thr Ile Arg Asn Asn Ser Trp Leu Tyr Gln Leu Ala Leu Asp Ile Gly
 385 390 395 400
 Thr Pro Tyr Gln Phe Asn Gly Ser Gly Ser Gly Lys Trp Glu Gly Gly
 405 410 415
 Pro Ser Lys Asn Ser Val Tyr Ile Ser Ser Leu Tyr Phe Thr Met Thr
 420 425 430
 Ser Leu Thr Ser Val Gly Phe Gly Asn Ile Ala Pro Ser Thr Asp Ile
 435 440 445
 Glu Lys Ile Phe Ala Val Ala Ile Met Met Ile Gly Ser Leu Leu Tyr
 450 455 460
 Ala Thr Ile Phe Gly Asn Val Thr Thr Ile Phe Gln Gln Met Tyr Ala
 465 470 475 480
 Asn Thr Asn Arg Tyr His Glu Met Leu Asn Ser Val Arg Asp Phe Leu
 485 490 495
 Lys Leu Tyr Gln Val Pro Lys Gly Leu Ser Glu Arg Val Met Asp Tyr
 500 505 510
 Ile Val Ser Thr Trp Ser Met Ser Arg Gly Ile Asp Thr Glu Lys Val
 515 520 525
 Leu Gln Ile Cys Pro Lys Asp Met Arg Ala Asp Ile Cys Val His Leu
 530 535 540
 Asn Arg Lys Val Phe Lys Glu His Pro Ala Phe Arg Leu Ala Ser Asp
 545 550 555 560
 Gly Cys Leu Arg Ala Leu Ala Met Glu Phe Gln Thr Val His Cys Ala
 565 570 575
 Pro Gly Asp Leu Ile Tyr His Ala Gly Glu Ser Val Asp Ser Leu Cys
 580 585 590
 Phe Val Val Ser Gly Ser Leu Glu Val Ile Gln Asp Asp Glu Val Val
 595 600 605

Ala Ile Leu Gly Lys Gly Asp Val Phe Gly Asp Val Phe Trp Lys Glu
610 615 620

Ala Thr Leu Ala Gln Ser Cys Ala Asn Val Arg Ala Leu Thr Tyr Cys
625 630 635 640

Asp Leu His Val Ile Lys Arg Asp Ala Leu Gln Lys Val Leu Glu Phe
645 650 655

Tyr Thr Ala Phe Ser His Ser Phe Ser Arg Asn Leu Ile Leu Thr Tyr
660 665 670

Asn Leu Arg Lys Arg Ile Val Phe Arg Lys Ile Ser Asp Val Lys Arg
675 680 685

Glu Glu Glu Glu Arg Met Lys Arg Lys Asn Glu Ala Pro Leu Ile Leu
690 695 700

Pro Pro Asp His Pro Val Arg Arg Leu Phe Gln Arg Phe Arg Gln Gln
705 710 715 720

Lys Glu Ala Arg Leu Ala Ala Glu Arg Gly Gly Arg Asp Leu Asp Asp
725 730 735

Leu Asp Val Glu Lys Gly Asn Ala Leu Thr Asp His Thr Ser Ala Asn
740 745 750

His Gly Leu Ala Lys Ala Ser Val Val Thr Val Arg Glu Ser Pro Ala
755 760 765

Thr Pro Val Ala Phe Gln Ala Ala Ser Thr Ser Thr Val Ser Asp His
770 775 780

Ala Lys Leu His Ala Pro Gly Ser Glu Cys Leu Gly Pro Lys Ala Gly
785 790 795 800

Gly Gly Asp Pro Ala Lys Arg Lys Gly Trp Ala Arg Phe Lys Asp Ala
805 810 815

Cys Gly Gln Ala Glu Asp Trp Ser Lys Val Ser Lys Ala Glu Ser Met
820 825 830

Glu Thr Leu Pro Glu Arg Thr Lys Ala Ala Gly Glu Ala Thr Leu Lys
835 840 845

Lys Thr Asp Ser Cys Asp Ser Gly Ile Thr Lys Ser Asp Leu Arg Leu
850 855 860

Asp Asn Val Gly Glu Ala Arg Ser Pro Gln Asp Arg Ser Pro Ile Leu
865 870 875 880

Ala Glu Val Lys His Ser Phe Tyr Pro Ile Pro Glu Gln Thr Leu Gln
885 890 895

Ala Thr Val Leu Glu Val Lys Tyr Glu Leu Lys Glu Asp Ile Lys Ala
900 905 910

Leu Asn Ala Lys Met Thr Ser Ile Glu Lys Gln Leu Ser Glu Ile Leu
 915 920 925

Arg Ile Leu Met Ser Arg Gly Ser Ser Gln Ser Pro Gln Asp Thr Cys
 930 935 940

Glu Val Ser Arg Pro Gln Ser Pro Glu Ser Asp Arg Asp Ile Phe Gly
 945 950 955 960

Ala Ser

C15
 cont